

A NEW SPECIES OF CYCLOCOELUM (A TREMATODE) FROM THE EASTERN SOLITARY SANDPIPER

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Four specimens of the genus *Cyclocoelum* Brandes were found in the airsac of a solitary sandpiper, *Tringa solitaria solitaria*, by Walter Morrison at Lemont, at the foot of Mt. Nittany, near State College in 1939. They were given to Assistant Professor Merrill Wood, an ornithologist, who presented them to the author for identification and study.

The specimens were in excellent condition for making permanent mounts. They were slightly flattened between microscopic slides, and stained with Delafield's hematoxylin.

At least thirty species of *Cyclocoelum* with well differentiated characters have been described from birds, and are listed in the comparative tables of Bhalerao (1935) and Khan (1935). The species *C. dumetellae* from the catbird (Zeliff, 1943), *C. jaenschi* (Johnson and Simpson, 1940) from the airsac of grebes, in Australia, and *C. turusigi* (Yamaguti, 1939) from *Tringa* may be added. Ten of the species mentioned are from the genus *Tringa*. The specimens from the eastern solitary sandpiper do not check completely enough with those from the several species of *Tringa* nor other species of *Cyclocoelum*. They are herewith described as a new species.

Cyclocoelum nittanyense, n. sp.

Specific diagnosis: Body oblong, anterior third tapering slightly, the posterior fourth rounding slightly, both lateral surfaces with gradual convergence throughout, 10 to 11 mm. in length by 2 to 3 mm. in width; cuticle undulating and rough; oral sucker 0.27 mm. in diameter, subterminal and indistinctly outlined; acetabulum or ventral sucker lacking; pharynx 0.22 mm. in width by 0.24 mm. in length; prepharynx very short; esophagus 0.39 to 0.52 mm. in width by 0.82 mm. in length; intestinal caeca continuous in the posterior end, typical for the genus; excretory bladder between posterior intestinal arc and body wall; testes circular in outline, obliquely located, contiguous, 0.53 mm. to 0.90 mm. in diameter, approximately of equal size; vas deferens not observed; vasa efferentia not observed; cirrus sac terminating slightly behind anterior arc of intestinal bifurcation, 0.63 mm. in length by 0.21 mm. in width at seminal vesicle; seminal vesicle filling about two-thirds of cirrus sac; genital pore at posterior end of pharynx; ovary 0.16 mm. by 0.22 mm. in diameter, toward left lateral surface; seminal receptacle 0.21 mm. in diameter; Mehlis' gland 0.22 mm. in diameter; vitellaria extending from slightly cephalic of cirrus sac to posterior margin of posterior intestinal arc; transverse vitelline ducts, between testes and posterior testis and ovary; ootype and oviduct not observed; Laurer's canal not observed; ova 75 to 90 μ by 105 to 150 μ oval as viewed from above, but flattened and crescentic or pan-shaped from lateral view; receptaculum seminis uterinum present; uterine loops quite chevron-like, uterine wall not distinct in posterior portion.

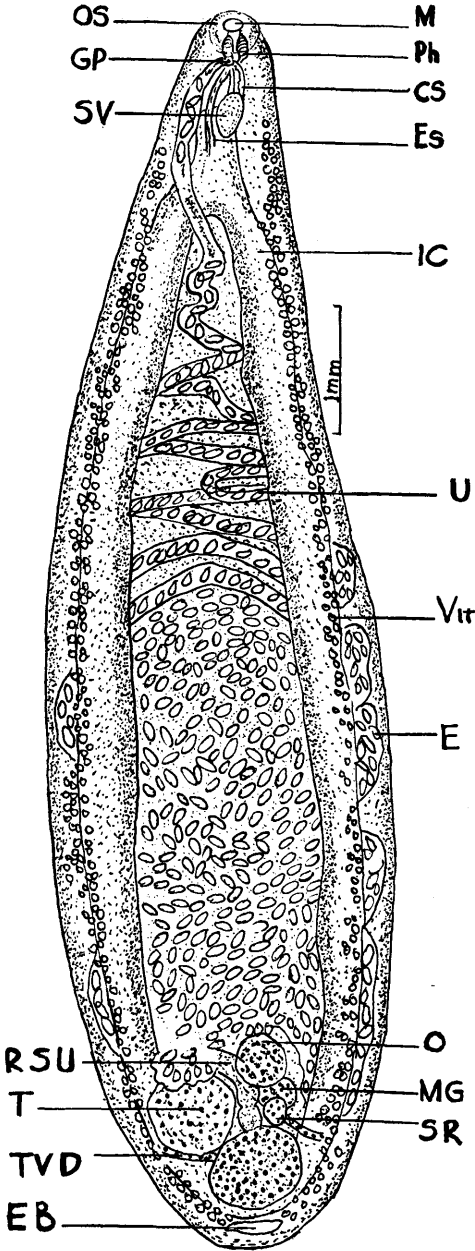
Host: *Tringa solitaria solitaria*.

Location: Airsac.

Locality: Lemont, Pa.

Type specimen: U. S. N. M. Helm. Coll. No. 36917 paratype also on same slide; two additional specimens in author's collection.

Remarks: The new species from the eastern solitary sandpiper is related to a group proposed by Khan (1935), with the ovary anterior to the testes, and a group in a section of the key made by Harrah (1922) with equal testes, not separated by uterine loops and with loops overlapping the ceca both dorsally and ventrally. Relationships to *C. taxorichis* (Johnson, 1917) of Australia of the first group are not close enough to make comparisons worth while. One of the four specimens has the testes reversed in position.



Explanation of Figure, ventral view:

- CS—cirrus sac
- E—egg
- EB—excretory bladder
- Es—esophagus
- GP—genital pore
- IC—intestinal cecum
- M—mouth
- MG—Mehlis' gland
- U—uterus
- O—ovary
- OS—oral sucker
- Ph—pharynx
- RSU—receptaculum seminis uterinum
- SR—seminal receptacle
- SV—seminal vesicle
- T—testis
- TVD—transverse vitelline duct
- Vit—vitellaria

FIG. 1. *Cyclocoelum nittanyense*, n. sp.

C. wilsoni (Harrah, 1922) from *Tringa (Glottis) wilsoni* of N. America and *C. triangularium* (Harrah, 1922) from *Tringa maculata* of N. America both have the testes at the same level rather than obliquely as the species from the eastern solitary sandpiper. The former also has unequal testes, genital pore at the middle of the pharynx, a shorter cirrus sac and less variable size of the eggs. The latter also has more constant size of the eggs and is of smaller size. The following three species have the testes in a position similar to the new species herein described but have the stated, several, major differences and minor differences, as do the previous two species.

Among the variations or differences of *C. halli* (Harrah, 1922), from *Tringa (Totanus) melanoleuca*, are the limitation of the vitellaria laterally to the ceca, size of eggs and location of the ovary toward the right lateral surface. The outstanding variations of *C. tringae* (Brandes, 1892) from *Tringa ocropus*, are the size, shorter cirrus sac, size of the eggs and unequal testes. In *C. brasilianum* (Stossich, 1903), from *Philomachus (Pavocella) pugnax*, *Tringa (Totanus) flavipes*, *Totanus melanoleuca*, and *Tringa solitaria* of S. America and in the next species the measurements of the bodies are the closest to this new species. The size of the eggs, shorter cirrus sac and the unequal testes are noticeable variations for this species from the new one. In *C. nebularium* (Khan, 1935) from *Tringa (Glottis) nebularia* from India these same variations occur. From *Tringa erythropus* of Japan, (Yamaguti, 1939) has described *C. turusigi*, which is not closely related. This last species differs from the species herein described by its much greater length, greater dimensions of the organs, location of the testes, and longer ova.

The host of *C. brasilianum* was given as *Scolopax flaviceps* and of *C. tringae* as *Tringa variabilis* by Stossich which names have been subject to rearranging. Khan (1935) lists more hosts for *C. brasilianum* than does its original describer, Stossich (1903). The western solitary sandpiper is now *Tringa solitaria cinnamomea* (Wilson).

According to Joyeux and Baer (1927) *C. triangularum* (Harrah, 1922) and *C. wilsoni* (Harrah, 1922) are synonyms of *C. taxorchis* (Johnson, 1917). Likewise *C. leidy* (Harrah, 1922) and *C. problematicum* (Stossich, 1902) is a synonym of *C. obscurum* (Leidy, 1887). Also, *C. halli* (Harrah, 1922) is a synonym of *C. brasilianum* (Stossich, 1902). This would obviate comparing the new species with some of the above, assuming that these synonyms are generally acceptable.

Witenberg (1926) described *Cyclocoelum (Corpopyrum) kossacki* from *Evolia (Tringa) alpina* from Russia. This was later placed by Joyeux and Baer (1927) in *Cyclocoelum*. The species herein described differs from this species quite distinctly in size of the organs, especially the testes, and in sizes of the eggs. They are not very different in measurements of bodies. Since the eggs of most worms are quite uniform in shape and constant in size, or range in size; eggs would be expected to be a fairly reliable distinctive characteristic. *Cyclocoelum nittanyense* n. sp. does not match very closely any of the fourteen species listed by Joyeux and Baer (1927) in their table.

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